

REMARKS

Favorable reconsideration is respectfully requested in view of the above amendments and following remarks. Claims 6, 9, 10, 19 and 20 have been amended editorially. No new matter has been added. Claims 6-22 are pending.

Claim Rejections – 35 USC §112

Claims 6, 7, 9, 10, 13-16 and 19-22 are rejected under 35 USC 112, second paragraph, as being indefinite. Claims 6 and 9 recite an effective amount for eliciting nitrogen absorption and protein synthesis in the plants or soils in which the plants are located. Claims 19 and 20 are directed to the fertilizing product. Claim 10 recites that the effective amount is between 0.1g and 100g per liter. Applicants submit that the claims are definite.

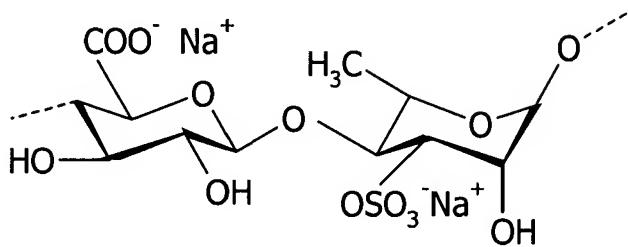
Withdrawal of the rejection is requested.

Claim Rejections – 35 USC §103

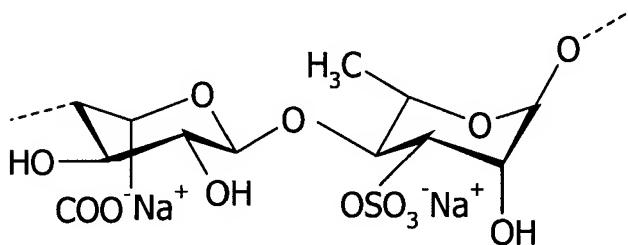
Claims 6-22 are rejected under 35 USC 103(a) as obvious over Iqbal et al. (Pak. J. Bot. (1999), 31(1): 193-198. *Studies on aqueous extracts of three green algae as an elicitor of plant defence mechanism.*). Applicants respectfully traverse the rejection.

The rejection contends that Iqbal teaches ulvans in the extract of Ulvan Lactulus since Iqbal teaches extracting polysaccharides from the green algae Ulvan Lactulus, and the Oligo Tech® catalogue defines “ulvans” as being structural acid polysaccharides present in the cell wall of green algae. However, the polysaccharide extracts described by Iqbal do not correspond to the ulvans of claim 6.

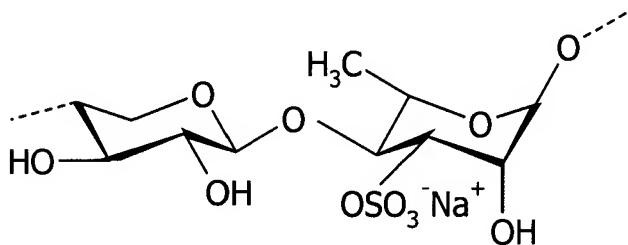
In particular, Iqbal indicates that the content of the polysaccharide extracts of *Ulva lactulus* was analyzed by acid hydrolysis and paper chromatography, and the results of the analysis showed that the extracts of *Ulva lactulus* contain glucose, rhamnose, arabinose, xylose, fucose, galactose and mannose (see page 196 of Iqbal). The reference further indicates that glucuronic and galactouronic acids were found in negligible amounts in the hot acid extracts of *Ulva lactulus* (*Id.*). However, as is clear from the Oligo Tech® reference and the present specification, ulvans are generally understood in the art to include repeating units of the following:



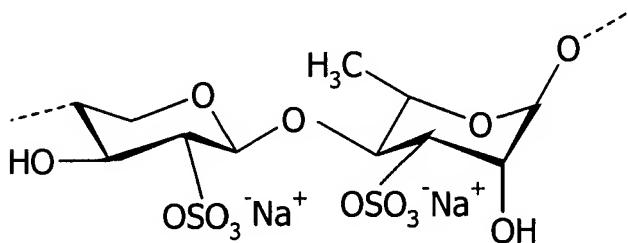
>4)- β-D-GlcA- (1>4)- α-L-Rha 3 sulfate(1>
(also called ulvanobiouronic acid 3-sulfate type A)



>4)- α-L-IdoA- (1>4)- α-L-Rha 3 sulfate(1>
(also called ulvanobiouronic acid 3-sulfate type B)



>4)- β-D-Xyl- (1>4)- α-L-Rha 3 sulfate(1>
(also called ulvanobiouronic acid 3-sulfate)



>4)- β-D-Xyl 2 -sulfate- (1>4)- α-L-Rha 3 sulfate(1>

(also called ulvanobiose acid 2',3-disulfate) (see page 4, line 13 to page 5, line 10 of the present specification). One of the recurrent units contains iduronic acid. Iqbal does not indicate that their polysaccharide extracts of *Ulva lactulus* include iduronic acid. Accordingly, Applicants submit that the polysaccharide extracts described by Iqbal do not correspond to the ulvans of claim 6.

The rejection contends that Table 2 of the reference indicates that their hydrolyzed polysaccharide extracts of *Ulva lactulus* contain the highest amounts of uronic acid, sulphates and sugars, and this shows that the essential plant elicitors are still present in the hydrolyzed ulvans. However, the reference does not indicate specifically that their hydrolyzed polysaccharide extracts of *Ulva lactulus* include iduronic acid. Accordingly, Applicants submit that the hydrolyzed polysaccharide extracts of *Ulva lactulus* do not correspond to the reaction product obtained from the treatment of the ulvan of claim 6 by chemical hydrolysis or enzymatic hydrolysis.

Moreover, claim 6 requires administering an effective amount of ulvans or a reaction product obtained from the treatment of the ulvans by chemical hydrolysis or enzymatic hydrolysis, for eliciting nitrogen absorption and protein synthesis in plants. On the other hand, the reference teaches that their extracts have activities that induce resistance in plants to prevent diseases. Nothing in the reference teaches or suggests that their extracts are added in an amount effective for eliciting nitrogen absorption and protein synthesis in plants, as required by claim 6. Accordingly, claim 6 and its dependent claims are patentable over the reference.

Independent claim 9 recites that the fertilizer product includes an effective amount of at least one of ulvans or a reaction product obtained from the treatment of said ulvans by chemical hydrolysis or enzymatic hydrolysis, for eliciting nitrogen absorption and protein synthesis in plants, in combination with one or more fertilizing substances. Advantageously, when the fertilizer product as recited in claim 9 is applied to plants, an increase in the total amount of proteins, for example root proteins, as compared to control plants as well as stimulation of the genes involved in nitrogen transport in the treated plants can be achieved (Examples 3 and 4).

As is clear from the discussion above, the polysaccharide extracts described by Iqbal do not correspond to the ulvans of claim 9. Even accepting arguendo that Iqbal's polysaccharide extracts of Ulvan luctulus correspond to the ulvans of claim 9, Iqbal teaches that their extracts of Ulvan luctulus were tested by themselves to evaluate their elicitor activity. Nothing in Iqbal teaches or suggests combining their extracts with one or more fertilizing substances as required by claim 9. Moreover, as indicated above, the reference teaches that their extracts have activities that induce resistance in plants to prevent diseases. Nothing in the reference teaches or suggests that their extracts are present in a composition in amounts effective for eliciting nitrogen absorption and protein synthesis in plants, as required by claim 9. Accordingly, claim 9 and its dependent claims are patentable over the reference.

In view of the above, favorable reconsideration in the form of a notice of allowance is requested. Any questions or concerns regarding this communication can be directed to the attorney-of-record, Douglas P. Mueller, Reg. No. 30,300, at (612) 455.3804.



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Respectfully submitted,

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